

REMARKS

Claims 70-100 are pending in the present application. In the Office Action dated November 10, 2005, claims 70, 71, 85, 86, and 90 were rejected under 35 U.S.C. 102(e) as being anticipated by Iida et al. (U.S. Patent No. 6,106,728). Claims 72, 75, and 76 were rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Iida et al. (U.S. Patent No. 6,106,728). Claims 73, 74, 77-84, 87-89 and 91-100 were rejected under 35 U.S.C. 103(a) as being unpatentable over Iida et al. (U.S. Patent No. 6,106,728).

As a preliminary matter, Applicant notes that, to date, the Form PTO-1449 from the Information Disclosure Statement filed April 1, 2004, has not been returned.

The disclosed embodiments of the invention will now be discussed in comparison to the prior art. Of course, the discussion of the disclosed embodiments, and the discussion of the differences between the disclosed embodiments and the prior art subject matter, does not define the scope or interpretation of any of the claims. Instead, such discussed differences merely help the Examiner appreciate important claim distinctions discussed thereafter.

Figures 2 and 3 show a planarizing system 100 having a planarizing machine 110 and a slurry manufacturing assembly 200 in accordance with one embodiment. The slurry manufacturing assembly 200 is configured to form an abrasive slurry 242 having a bi-modal distribution of abrasive particles without having the deleterious problem of agglomeration of the abrasive particles. The slurry manufacturing assembly 200 includes a first supply container 210 containing a first solution 212 having a plurality of first abrasive particles and a second supply container 220 containing a second solution 222 having a plurality of second abrasive particles of a different type than the first abrasive particles. In this particular embodiment, the slurry manufacturing assembly 200 also includes a first particle removal unit 230 in fluid communication with the first container 210 via a feed line 219a, a second particle removal unit 235 in fluid communication with the second container 220 via a feed line 229a, and a mixing unit 240 in fluid communication with the first and second particle removal units 230 and 235 via feed lines 219b and 229b, respectively. The first and second particle removal units 230 and 235 may be first and second filtration units that separately filter selected abrasive particles from the first and second solutions 212 and 222 such as, for example, agglomerated particles. The filtered first and second solutions 212 and 222 are then combined in the mixing unit 240 to form the abrasive slurry 242 for planarizing the substrate assembly 12 on the planarizing machine 110. The

abrasive slurry 242 is formed of the first and second solutions 212 and 222 and includes the first and second abrasive particles.

The Examiner has cited Iida. In contrast to the Applicant's embodiments, the apparatus and method taught by Iida, is designed for recycling a single particle slurry. The objective of the apparatus and method taught by Iida, is to recover useable particles in the singlet particle slurry, after it has been used for planarization.

As shown in Figure 2 of Iida, to accomplish these goals, Iida teaches passing a previously used planarizing slurry S through one filter 4 that removes gross particles. The filtered solution is then passed through an ion capturing filter 5a that removes silicon dioxide ions and other ions. The filtered and de-ionized solution is then passed to a vessel 52 where the pH of the slurry is monitored and adjusted back to the pH of the original solution. The filtered, de-ionized and pH adjusted solution is then mixed with a concentrated solution S' of particles of the same size as the original planarizing solution to restore the recycled solution to the same particle concentration as the original solution. Finally, the combined solution of filtered, de-ionized, pH adjusted and re-concentrated slurry S and the new S' solution is treated using another filter 7 that removes particles greater than 0.5 microns, making the singlet abrasive slurry solution ready for reuse.

Iida does not disclose or fairly suggest a first feed line for containing a flow of a first solution having a plurality of first abrasive particles in fluid communication with a first filter to receive the flow of the first solution and a combination feed line in fluid communication to receive the filtered flow of first solution in combination with a second feed line for containing a separate flow of a second solution having a plurality of second abrasive particles being in fluid communication with the combination feed line. In fact, Iida teaches away from Applicant's embodiments because Iida teaches filtering the solution after the two solutions S and S' have been combined.

Turning now to the claims, the patentably distinct differences between the cited references and the claim language will be specifically pointed out. As amended, claim 70 recites, in part, "a slurry manufacturing assembly including a first feed line for containing a flow of a first solution having a plurality of first abrasive particles, a second feed line for containing a separate flow of a second solution having a plurality of second abrasive particles, a first removal unit coupled to the first feed line, the first removal unit configured to selectively remove a first type of selected abrasive particles from the first abrasive particles, and a combination feed line in

fluid communication with the first removal unit to receive a filtered flow of the first solution from the first removal unit, the combination feed line further being in fluid communication with the second feed line to receive a flow of the second solution from the second feed line that is separate from the filtered flow of the first solution; and a slurry dispenser coupled to the combination line to dispense an abrasive slurry comprising the first and second solutions, the dispenser being positionable over the table to dispense the slurry from the combination line onto the planarizing pad.” Iida fails to disclose or fairly suggest the above limitations. Namely, Iida fails to disclose or fairly a slurry manufacturing assembly structured so that at least one the first and second slurry solutions are filtered prior to being combined into a single flow in the combination feed line.

As amended, claim 90 recites, in part, “a slurry manufacturing assembly including a first feed line for containing a flow of a first solution having a plurality of first abrasive particles, a second feed line for containing a separate flow of a second solution having a plurality of second abrasive particles, a first removal unit coupled to the first feed line, the first removal unit configured to selectively remove a first type of selected abrasive particles from the first abrasive particles, and a combination feed line in fluid communication with the first removal unit to receive a filtered flow of the first solution from the first removal unit, the combination feed line further being in fluid communication with the second feed line to receive a flow of the second solution from the second feed line that is separate from the filtered flow of the first solution; at least one of a mixer configured to mix a combined flow of the first and second solutions received from the combination feed line and a conduit through which the combined flow is passed to form a turbulent zone; and a slurry dispenser coupled to the combination line to dispense the combined flow , the dispenser being positionable over the table to dispense the slurry from the combination line onto the planarizing pad.” Iida fails to disclose or fairly suggest the above limitations. Namely, Iida fails to disclose or fairly a slurry manufacturing assembly structured so that at least one the first and second slurry solutions are filtered prior to being combined into a single flow in the combination feed line.

Claims depending from claim 70 and 90 are also allowable due to depending from an allowable base claim and further in view of the additional limitations recited in the dependent claims.

All of the claims remaining in the application are now clearly allowable.
Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,
DORSEY & WHITNEY LLP



Marcus Simon
Registration No. 50,258
Telephone No. (206) 903-8787

MS:clr

Enclosures:

Postcard
Check
Fee Transmittal Sheet (+ copy)
Request for Continued Examination (+ copy)

DORSEY & WHITNEY LLP
1420 Fifth Avenue, Suite 3400
Seattle, Washington 98101-4010
(206) 903-8800 (telephone)
(206) 903-8820 (fax)

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